

Pacific Highly Migratory Pelagic Fisheries

INTRODUCTION

The fishes in this group range the high seas and often are outside U.S. fisheries management jurisdiction. The status of many are either uncertain or unknown. Some species are sought vigorously by both commercial and sport fishermen.

During 1976-80, the eastern tropical Pacific (ETP) tuna fishery expanded and was dominated by the United States. Fishing became less profitable in the 1980s, and many U.S. fishermen quit or moved to the central-western Pacific (CWP), leaving Mexico, with over 50 purse seiners, the dominant fleet in the ETP. In the next decade, U.S. vessels decreased to about 7 in 1993-94 in response to dolphin mortality concerns. Purse seiners (all countries) in the ETP in 1993 numbered over 148. Currently, there is no international tuna management in the ETP; each coastal nation regulates fishing

within its own EEZ. Until 1980 the Inter-American Tropical Tuna Commission (IATTC) regulated the international fishery with catch quotas. Since then, IATTC regulations have been suspended because Mexico is not a Commission member.

Also, there is no overall resource management program in the CWP, though the Forum Fisheries Agency (FFA), which represents the concerned South Pacific island nations, has instituted a licensing program for foreign (distant-water) fishing fleets through access agreements. The U.S. fleet is currently limited to 55 purse seiners in the FFA region under an access agreement (South Pacific Regional Tuna Treaty).

Presently, there are no management regimes for the North or South Pacific albacore fisheries. In the South Pacific, multilateral discussions between Pacific island nations and distant-water fishing nations, including the United States, were held to explore various management schemes. Following the demise of drift gillnet fishing in the South Pacific, these negotiations were suspended in 1992 due to lack of further interest.

U.S. billfish harvests (except for swordfish) have been dwarfed by foreign harvests (mostly from longline and drift gillnet fisheries). There is no international authority managing these species in the Pacific. U.S. management authority for billfish and tuna rests with the Western Pacific FMC for central and western Pacific waters, and with the Pacific FMC for North American waters (although the latter has delegated management to the State of California for swordfish, striped marlin, and some sharks). The temperate water bluefin tuna is not considered here, as most catches have been relatively minor off California in recent years. This species is taken incidentally while purse seine fishing for other species (anchovy and mackerel; yellowfin and skipjack tuna).

SPECIES AND STATUS

“Highly migratory” pelagic species include tropical tunas (yellowfin, bigeye, and skipjack), albacore, marlins, sailfish, swordfish, sharks,

Table 18-1. Pacific Highly Migratory Pelagics

Productivity in metric tons and status of fisheries resources

Species / Area	Recent Average Yield (RAY) ¹	Current Potential Yield (CPY)	Long-Term Potential Yield (LTPY)	Fishery Utilization Level	Stock Level Relative to LTPY
Yellowfin tuna (CWP) ²	369,233	Unknown	Unknown	Unknown	Near
Yellowfin tuna (ETP) ³	332,033	250,000	Unknown	Full	Near
Skipjack tuna (CWP)	959,000	Unknown	Unknown	Under	Near
Skipjack tuna (ETP)	73,000	Unknown	Unknown	Under	Near
Albacore (North Pacific)	46,800	Unknown	80,000	Over	Below
Albacore (South Pacific)	30,833	Unknown	Unknown	Unknown	Near
Bigeye tuna	152,011	160,000	160,000	Full	Near
Blue marlin	22,057	Unknown	Unknown	Over	Below
Black marlin	4,230	Unknown	Unknown	Unknown	Near
Striped marlin	11,746	Unknown	Unknown	Under	Near
Sailfish and shortbill spearfish	5,729	Unknown	Unknown	Unknown	Near
Swordfish	29,125	Unknown	25,000	Under	Near
Wahoo	527	Unknown	Unknown	Unknown	Near
Dolphinfish (mahi mahi)	30,614	Unknown	Unknown	Unknown	Near
Pelagic sharks	10,294	Unknown	Unknown	Unknown	Unknown
Total	2,077,232	2,003,188	2,033,706		
U.S. Subtotal	240,438	248,427	278,945		

¹ 1990-92 average; includes U.S. and foreign landings; U.S. landings were 240,483 t of tunas, swordfish, and billfish only.

² CWP = central-western Pacific Ocean.

³ ETP = eastern tropical Pacific Ocean.

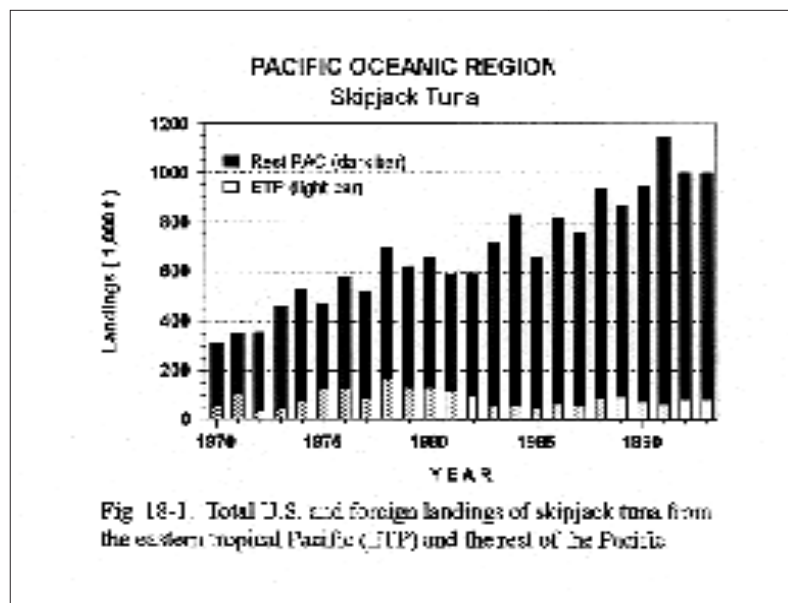
and other large pelagic fishes. Most are caught commercially, but some, especially marlins, support important recreational fisheries as well.

Tropical Tunas

Longline gear is used to catch yellowfin and bigeye tunas across the Pacific, whereas the purse seine is the primary gear in the ETP and the western Pacific for capture of yellowfin and skipjack tunas. Purse seine fishing is conducted generally between lat. 20°N and 20°S. Longline fishing extends to higher latitudes (e.g., to 40°N). Other gears used in the CWP fisheries include ring net, handline, and pole-and-line. Purse seiners, dominated by U.S. and Japanese fleets but currently challenged by Korean and Taiwanese fleets, take 30-50% of the yellowfin tuna catch in the CWP. In 1993, the total number of purse seiners in the CWP was more than 200, including 42 U.S. seiners. Virtually all skipjack tuna is taken by pole-and-line and purse seine. Most of the bigeye tuna catch is taken by longline gear.

Mexico is the primary fishing nation in the ETP. Others include the United States, Vanuatu, Venezuela, and some other coastal nations. Major fishing nations in the CWP are the United States, Japan, the Republic of Korea, and Taiwan. Current, recent, and long-term potential yields for the various species are given in Table 18-1.

More skipjack tuna are caught than any other tuna species. The RAY of Pacific skipjack tuna by U.S. and foreign fleets is 959,000 t from the CWP and 73,000 t from the ETP (Fig. 18-1); recreational catches are small. The species is believed underutilized, though the LTPY is unknown. The annual dockside ex-vessel revenue of the U.S. and foreign Pacific skipjack tuna catch is about \$825 million, and for yellowfin tuna it is well in excess of \$561 million. These figures are based on a conservative dockside price of \$800/t for both species. The RAY of yellowfin tuna for the entire Pacific is about 701,000 t (Table 18-1), distributed about equally between the ETP and the CWP (Fig. 18-2). Recent assessments of yellowfin tuna indicate that the LTPY for the ETP is about 250,000 t, making this resource fully utilized. The LTPY for the CWP is unknown because a comprehensive analysis of potential yield has not been performed. However, catch rates are fairly steady, and preliminary analyses of stock condition suggest that the fishery may be



nearing full production.

The RAY of bigeye tuna for the entire Pacific is about 152,000 t (Table 18-1) generating ex-vessel revenues of about \$1 billion, with most of the catch taken by foreign longline fisheries. Bigeye tuna is mostly sold for raw consumption as “sashimi” and brings the highest dockside price of any tropical tuna (about \$7,000/t). The best available estimates of LTPY and CPY are about 160,000 t (Table 18-1), and the current level of fishing effort is the highest recorded to date. Recent catch rates have been low but stable, and the stock may be fully utilized.

Albacore

Albacore is fished from the northern limits of the North Pacific Transition Zone (NPTZ) to about lat. 15°N, and from Japan to North America. In the South Pacific, it is fished from about lat. 15°S to the southern limits of the Subtropical Convergence Zone (STCZ) and from South America to Australia.

In the North Pacific, albacore is fished primarily by longline, pole-and-line, trolling, and until recently, drift gillnet. Longline gear is used in the lower latitudes and

E. Tropical Pacific Skipjack Tuna Landings (t)

1993	82,800
1994	83,800

Rest of Pacific Skipjack Tuna Landings (t)

1993	918,500
1994	917,500

E. Tropical Pacific Yellowfin Tuna Landings (t)

1992	331,300
1993	324,600

W. Central Pacific Yellowfin Tuna Landings (t)

1992	390,500
1993	397,000

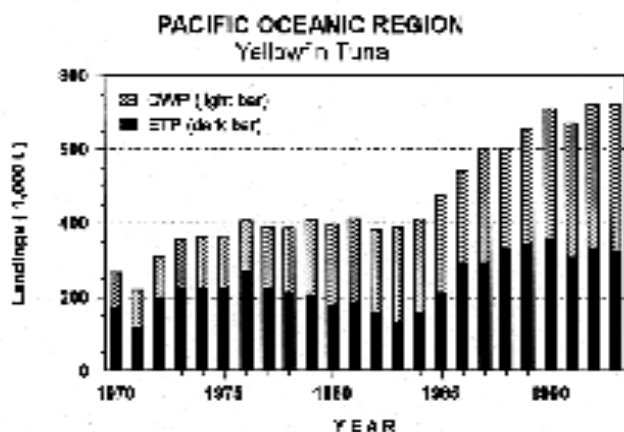


Fig. 18-2. Total U.S. and foreign landings of yellowfin tuna from the eastern tropical Pacific (ETP) and central-western Pacific (CWP).

North Pacific Albacore Tuna Landings (t)

1992	55,400
1993	44,200

South Pacific Albacore Tuna Landings (t)

1992	28,700
1993	26,800

accounts for about 20-25% of the current catches. The surface fisheries (pole-and-line, troll) operate in the higher latitudes of the NPTZ and account for 75-80% of the catches. The U.S. fishery in the North Pacific extends from the middle of the North Pacific to North America and uses between 500 and 2,000 vessels. Based on a dockside price of \$2,200/t, the annual ex-vessel revenue of the North Pacific albacore catch is about \$120 million.

South Pacific albacore is fished primarily by longline and trolling. As in the north, longliners operate nearer the equator than trollers. Surface gear is fished in the Tasman Sea and in the STCZ at about long. 160°W. In 1993, about 47 U.S. trollers fished the South Pacific.

Pacific albacore (both the north and south stocks) has a long history of exploitation (Fig. 18-3). Recent development of a large surface fishery in the South Pacific, in addition to the longline fishery, has changed the previous stock assessments from fully exploited, under a longline-only fishery, to unknown. No LTPY has yet been estimated, but a comprehensive assessment is needed due to the rapid expansion of the troll fishery and termination of the driftnet fishery in 1991.

In the North Pacific, the total catch, catch rates, and fishing effort in the U.S. troll fishery and the Japanese pole-and-line fishery have all

been declining (Fig. 18-3). Previous assessments estimated LTPY near 120,000 t and stock production at or above LTPY in the 1970s. This high production, coupled with a drift gillnet fishery from 1980 to 1992 (for which statistics are incomplete), probably overutilized the stock. A comprehensive assessment is needed due to the changing fisheries.

Swordfish

Swordfish are distributed throughout the temperate, subtropical, and tropical waters of the Pacific. Much of the Pacific-wide catch is taken by the Japanese longline fishery directed at tunas, with the rest taken by surface gears such as harpoons, handlines, and until recently, drift gillnets. Coastal fisheries occur off the United States, Japan, Taiwan, Mexico, Chile, and Australia. The catch has increased throughout the 1980s and 1990s (Fig. 18-4), averaging about 29,000 t in recent years (Table 18-1).

The stock structure and status of Pacific swordfish stocks are unclear. Several studies suggest more than one Pacific stock. The most recent assessment assumed a single Pacific stock and suggested that the stock was somewhat underutilized. However this assessment was limited to data through 1980. More recent statistics on catch and effort are not available, but as total catch has increased so has the crude estimate of LTPY. The RAY for 1990-92 exceeds the estimated LTPY (Table 18-1).

From 1989-93, production from the U.S. domestic longline fishery in Hawaii increased rapidly reaching 6,100 t and an ex-vessel revenue of \$26.8 million in 1993 (Fig. 18-4). The 1992 production represents 16% of the total Pacific production and 50% of the central-eastern North Pacific production. However, production in the Hawaii fishery declined to 3,100 t in 1994.

The production from the U.S. domestic gillnet and harpoon fisheries located primarily off California increased dramatically from 1975 to 1985, when a peak catch of 2,400 t was landed. The fishery currently lands about 1,000 t of swordfish annually which yields about \$4.0 million in ex-vessel revenue annually.

Other Billfishes and Pelagics

Species included here are the blue, black, and striped marlins; sailfish, shortbill spearfish, wahoo, mahimahi (dolphinfish); and several

oceanic sharks (requiem, thresher, hammerhead, and mackerel). They generally range from North America to Asia and between the North and South Pacific STCZ's. They are generally more abundant near islands, continental slopes, seamounts, and oceanic fronts, and many are important to local economies. They are caught by foreign and U.S. fishermen, both sport and commercial.

U.S. commercial fishermen in the western and central Pacific primarily use longline, troll, and handline gear to catch marlins, spearfish, wahoo, and mahimahi. Recreational fishing gears include rod-and-reel and handline. Sharks are taken by longline around the Hawaiian Islands and by harpoon and drift gillnet off North America.

Because of the many species in this "other species" category, no accurate value can be calculated for the annual catch. However, the U.S. catch of blue and striped marlins is worth about \$2,000/t ex-vessel, and the U.S. catch of wahoo and dolphinfish (mahimahi) is worth over \$4,000/t.

Three species dominate the reported catches of "other pelagic species": blue and striped marlins and mahimahi. Pacific-wide shark catches in the "Carcharhinidae" and "requiem sharks" categories reported to the United Nations Food and Agriculture Organization total about 22,000 t per year, but pelagic shark catches are reported by only a few nations. The total Pacific harvest of pelagic sharks is unknown. Catches of "other species" by U.S. fisheries in the central and western Pacific increased steadily through the 1980s, leveling out in the 1990s, while catches by U.S. fisheries in the eastern Pacific have declined (Fig. 18-5).

The status of most species' stocks is unknown or uncertain. Assessments using data through 1985 indicated that striped marlin were utilized slightly below LTPY, and blue marlin was fished above LTPY; however, new data are needed to confirm or dispute these findings. The conditions of virtually all shark species remain unknown.

ISSUES

Management Concerns

The primary issue for the management of pelagic species in the Pacific is the lack of consensus on a comprehensive international plan for gathering and reporting statistics and for

setting up a conservation and management group to encompass all interests. The poor quality of some data and the lack of current data in several fisheries prevents conducting accurate and up to date stock assessment, developing informed management options, and preparing pragmatic advice for rational exploitation of the resource.

Within the U.S. EEZ of the central and western Pacific, including Hawaii, American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands, the Western Pacific FMC has developed, and the Secretary of Commerce has approved, an FMP for pelagic species. The FMP specifically addresses concerns about the

W. Pacific Swordfish U.S. Landings (t)

1993	6,100
1994	3,100

W. Pacific Billfish and Shark U.S. Landings (t)

1991	3,100
1992	2,280

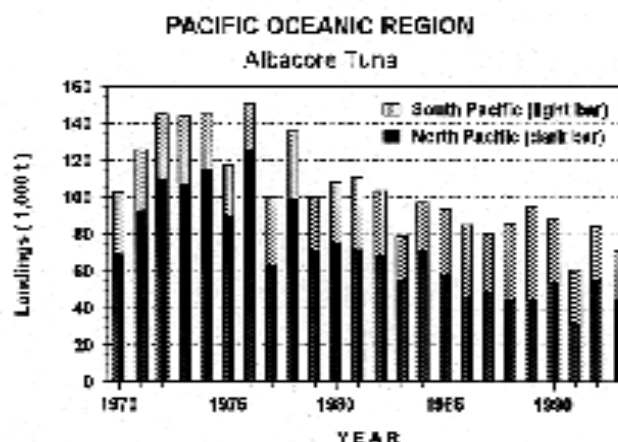


Fig. 18-3. Total landings (U.S. and foreign) of albacore tuna from the North and South Pacific regions

expanded Hawaii longline fleet and the potential for interactions among longliners, trollers, and handliners by placing a cap on the number of permits issued to longliners and establishing nearshore zones closed to longlining. At the Council's behest, NOAA Fisheries implemented a mandatory logbook and reporting system in the region's domestic longline fleet to collect statistics for fishery monitoring. Research is underway to analyze the fishery statistics and evaluate the effectiveness of the longline fleet limits.

A new concern is the impact on the

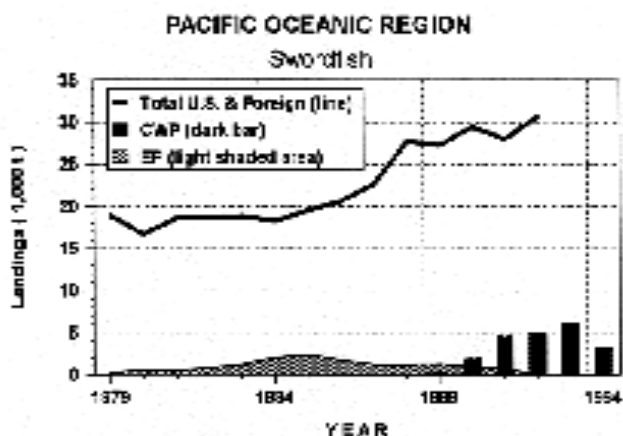


Fig. 18-4. Total U.S. and foreign landings of swordfish from the Pacific Ocean and U.S. landings from the eastern Pacific (EP) and the central-western Pacific (CWP) regions.

swordfish stock in the eastern and central Pacific of increased fishing effort due to the expanded Hawaii fishery and developing longline fleets based in California and Alaska. Proposed new controls may result in further expansion of the Hawaii-based swordfish fishery by allowing the smaller longliners that previously fished for tuna in the closed nearshore zones to upgrade their vessels for offshore swordfish fishing. Although fishing the same swordfish resource as the Hawaii-based

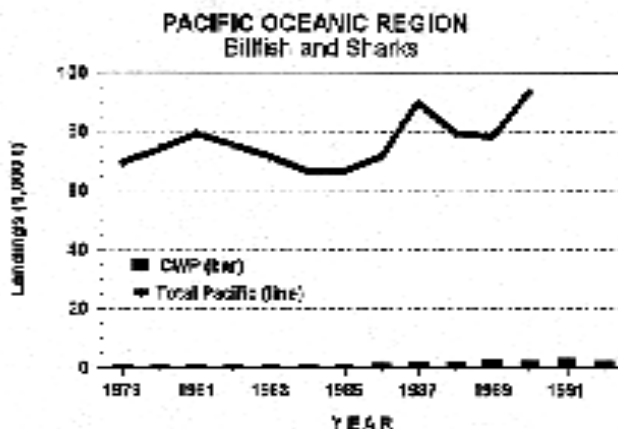


Fig. 18-5. Total U.S. and foreign landings of other pelagic species (billfish and sharks) from the central western Pacific (CWP) and total for the North Pacific Ocean.

vessels, longline vessels operating out of California and Alaska have not been subject to the management regulations developed by the

Western Pacific FMC.

High-seas drift gillnet fisheries have taken a dominant share of the North Pacific albacore catch until their elimination in 1993. The full impact of the driftnet gear on the stock is not yet clear; however, data from the fisheries are being evaluated. In the South Pacific, the interaction between the established longline albacore fishery and a rapidly growing surface fishery (predominantly U.S.) needs attention, particularly if allocation of available yield between the fisheries becomes an issue. The scope, structure, and organization of a multilateral management regime is another issue which needs attention.

The North Pacific albacore stock appears to be overutilized, possibly due to the long period of heavy catches by drift gillnets. Further data collection and an evaluation of the effects of the drift gillnet fishery and other factors, including environmental changes, are urgently needed. Creation of an international forum to manage the stock is another issue that needs attention, particularly if the fishing nations want to reap the benefits of a recovered stock. Scientists recognize that at least one billfish species, the Indo-Pacific blue marlin is, and has been, depleted over its range, but no management mechanism exists to rebuild the stock. Similarly, thresher sharks and mako sharks taken in the west coast drift gillnet fishery may need protection from overexploitation.

The potential take of endangered Hawaiian monk seals and sea turtles is also of concern. The problem has been addressed by the Western Pacific FMC through a strict prohibition of longlining within a 50-mile area surrounding the Northwest Hawaiian Islands. Sea turtle bycatch is further investigated using data gathered by NOAA Fisheries observers on longline vessels.

Scientific Advice and Adequacy of Assessments

Population levels of the billfishes and other species are either unknown or out of date. There is no international mechanism to collect fishery data on the Pacific-wide stocks, including those portions of the stocks that range in the U.S. EEZ. Basic biological data (beyond catches) are also lacking or grossly inadequate for most of these species. This limits determination of the current condition of the stocks. Bycatch of these species in other fisheries is another issue.

The impacts of the increased U.S. longline fleet in the Hawaiian EEZ and the central Pacific

on swordfish and other resources are unknown, but the catches are being monitored, and research is under way to better assess the stocks.

PROGRESS

Research has been focused on selected issues, and progress has been made for several species. However, on the whole, the number of species and issues remains more than can be addressed given current agency resources.

For CWP yellowfin tuna, a series of informal international scientific meetings are under way to assemble and organize needed statistics as a precursor for a comprehensive assessment. For albacore and other tuna and tuna-like species in the North Pacific, a multilateral scientific agreement is expected to be implemented in 1996.

Management of the domestic fisheries has been successful in eliminating gear conflicts among longline, troll, and handline fisheries. Limited entry and area closures in the Hawaii longline fishery have stabilized or reduced the longline catch of yellowfin tuna, blue marlin, and other pelagic species important to nearshore troll and handline fisheries, thus reducing the potential for fishery interaction. At the same time, the total yield of the Hawaii longline fishery has increased due to a change in targeting from tuna to swordfish by some vessels, modifications of the seasonal limits of the area closures, and changes in areas of operations and species targeting by the tuna longline fleet. Area closures implemented in the northwest Hawaiian Islands to prevent interaction of the longline fleet with the endangered Hawaiian monk seal have been fully successful. □